

### 3.2.5 Exterior Groundwater Sampling

Exterior groundwater samples were co-located with exterior soil sampling locations where historical building use, tank presence, demolition practices, or analytical data indicated potential for contaminants of concern to volatilize from groundwater to occupied interior spaces, posing an inhalation exposure risk to workers and visitors. Contaminants of concern for analysis were specified building-by-building based on former ordnance plant operations, and included VOCs, SVOCs, TPH, PCBs, pesticides, and herbicides.

Based on currently available information, groundwater sampling was attempted within the footprints or around the perimeters of the following buildings (see Figure 23 in Appendix A and Table 8 in Appendix B). Only at those locations with asterisks was groundwater available for collection of a groundwater sample. Samples were collected for the laboratory analyses specified in Table 8 in Appendix B.

- 103 K
- 104 A/B/C/D\*
- 104 N
- 108 A and 111\*
- 108 B\*
- 115 and USTs\*
- 122 B\*
- 136 A
- 136 B\*
- 136 E\*
- 136 F\*
- 137 A
- 208 B

No groundwater samples were collected from planned sampling locations DPTGW-43 near Building 103 K, DPTGW-23 and DPTGW-28 near Building 104, DPTGW-41 near Building 104 N, DPTGW-11 near Building 108 A, DPTGW-35 near Building 136 A, DPTGW-38 near Building 137 A, and DPTGW-45, -46, and -47 near Building 208 B. Despite allowance for the temporary wells to recover overnight, groundwater was absent or of insufficient volume for sample collection at these locations. Similarly, insufficient groundwater was present to fill the laboratory-provided sample containers for SVOC and diesel- and oil-range organic TPH analyses at sampling location DPTGW-9 near Building 108 A, and for pesticide and herbicide analyses at sampling location DPTGW-6 near Building 122 B; sample containers were filled for the other planned analyses at these locations.

Tetra Tech collected the exterior groundwater samples in general accordance with EPA ERT SOP 2007, *Groundwater Well Sampling* (EPA 1995). Where ample groundwater was present, groundwater samples were collected from temporary monitoring wells created using a Geoprobe Screen Point 15 sampling apparatus with a disposable 4-foot-long polyvinyl chloride (PVC) screen. Where insufficient groundwater was present, the rods were replaced by disposable, rigid, PVC tubing with a 10-foot screen, and the temporary well was allowed to recover overnight. In either case, the screen was placed at or directly below the water table, and samples were collected through disposable polyethylene tubing using

either a peristaltic pump or a check valve placed at the bottom of the tubing. Where ample groundwater was available, approximately three tubing volumes of groundwater were purged prior to sampling.

Groundwater samples were collected in laboratory-supplied containers, beginning with those parameters with the greatest potential for volatilization. Groundwater samples collected for dissolved metals analysis were filtered in the field using a Nalgene Filter Unit (or equivalent) with a 0.45-micrometer filter. Groundwater samples collected for all other analyses were unfiltered.

### **3.2.6 Quality Control Sampling**

Field QC samples were collected to help evaluate the validity of original field sample data. Table 9 in Appendix B summarizes the types of field QC samples collected, including field duplicates, trip blanks, and equipment blanks. Additionally, extra sample volume was collected at select locations for laboratory matrix spike/matrix spike duplicate (MS/MSD) analysis.

#### **Field Duplicate Samples**

Collection and analysis of field duplicates allows evaluation of consistency of the overall sampling and analytical system. Field duplicates are two environmental samples collected at the same time and at the same location for separate submittals to the laboratory for analysis. Field duplicate samples were attempted for 5 percent of groundwater samples; however, insufficient groundwater volumes prevented collection of a second groundwater sample volume at any location. Field duplicate soil, surface dust, or concrete samples were collected but were not considered critical or representative of data quality, given the difficulty of collecting truly homogeneous, co-located samples from these media.

#### **Equipment/Media Blanks**

Equipment blank samples permit evaluation of equipment decontamination procedures. These blanks were collected as samples of clean, analyte-free water passed through and over the sampling equipment. One equipment blank was collected on each day that non-disposable, non-dedicated Geoprobe sampling equipment was used to collect subsurface soil or groundwater samples. The equipment blanks were collected by pouring deionized water over or through the decontaminated sampling equipment and collecting it in the appropriate sample containers. The blanks were analyzed for the same parameters as their corresponding environmental samples. In lieu of equipment blanks for surface dust sampling, media blank samples were submitted for analysis.